Read before Use

Instruction Manual

Thermostatic Expansion Valves
Model: Type QCX/RCX

SAGINOMIYA

1. Preface

Thank you for purchasing Type QCX/RCX Thermostatic Expansion Valves.
Read this instruction manual thoroughly before use, and ensure that the product is used within its rated specifications according to the manual.
This product is supplied with a document containing a QR code for downloading the instruction manual. **Be sure to keep it in an easily accessible place for future reference. Always check the latest version of the instruction manual available on our website via the QR code before each use, paying particular attention to the safety precautions.**

2. Safety Precautions

■ **Warning and caution indications**

Warnings and cautions in this instruction manual provide **important safety information**.
To protect you and other people against danger or damage caused by improper use of the product, **be sure to comply with these indications, as well as international standards (ISO/IEC), Japanese Industrial Standards (JIS)[*1], and other safety regulations[*2].**

***1) IEC 60204-1: Safety of machinery -Electrical equipment of machines**
IEC 60335-1: Household and similar electrical appliances -Safety-Part1 -General requirements
IEC 60335-2-24: Household and similar electrical appliances -Safety-Part2-24
IEC 60335-2-40: Household and similar electrical appliances -Safety-Part2-40
IEC 60335-2-89: Household and similar electrical appliances -Safety-Part2-89
ISO 5149: Refrigerating systems and heat pumps -Safety and environmental requirements Part 1 to 4, etc.

***2) Industrial Safety and Health Act, High Pressure Gas Safety Act, EU Directives, Occupational Safety and Health Act, etc.**

⚠ **WARNING**	Indicates a hazardous situation that could result in serious injury(1) or death if the product is handled improperly.
⚠ **CAUTION**	Indicates a hazardous situation that could result in injury(2) or property damage(3) if the product is handled improperly.

(1) **Serious injury** refers to blindness, injury, burn (high-temperature, low-temperature), electric shock, bone fracture, or poisoning that leaves aftereffects and requires hospitalization and/or extended medical treatment.
(2) **Injury** refers to injury, burn, or electric shock that does not require hospitalization or extended medical treatment.
(3) **Property damage** refers to any damage affecting a house, household property, livestock, and/or pets.

Explanations of symbols

Symbol		Description	Example	
Prohibition		Indicates prohibited actions for handling the product.	 General prohibition	 Prohibited: Disassembly
Warning		Indicates the hazards and precautions for handling the product.	 General caution	 Caution: Electric shock
Instruction		Indicates the instructions for handling the product.	 General instruction	

WARNING	
	When using the product, do not apply pressure exceeding the limits specified in the instruction manual. Applying abnormal pressure beyond the product specifications may cause the equipment or piping to rupture, resulting in injury from scattered parts or suffocation due to leaked refrigerant. Before beginning work, be sure to check the specifications and pressure range of the equipment to be used, take all necessary safety precautions, and wear appropriate protective gear.
	Use the product only under the conditions described in the instruction manual. Perform periodic maintenance. Exposure to harsh conditions beyond the specified operating conditions or prolonged use may degrade the sealing integrity of the product. In addition, leaked refrigerant may cause fire or suffocation.
	Before maintenance, inspection, or replacement, be sure to recover the refrigerant from the refrigeration system and perform the work only after confirming that no refrigerant remains inside the product. Failure to do so may cause fire or suffocation due to refrigerant leakage. In addition, escaping refrigerant or flying debris may cause eye or bodily injury, or even blindness.

CAUTION	
	Do not disassemble the product. Doing so may reduce pressure capacity or cause failure.

Description of terms

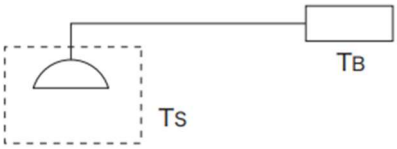
Terms	Description
MOP	MOP stands for Maximum Operating Pressure. Even if the temperature rises above the MOP temperature, the valve does not open further. The temperature at this point is called the MOP temperature.
Max. working pressure (MP)	This is the maximum pressure (design pressure) at which the expansion valve operates properly under normal operating conditions.
Leak test pressure	The pressure used to test for external leakage from the expansion valve. This pressure is higher than the design pressure.
T_S: Element temperature T_B: Sensing bulb temperature	 T_S: Element temperature T_B: Sensing bulb temperature (control temperature)
Static superheat	The superheat at which the valve begins to open from the closed position.
Pressure indication	Gauge pressure.

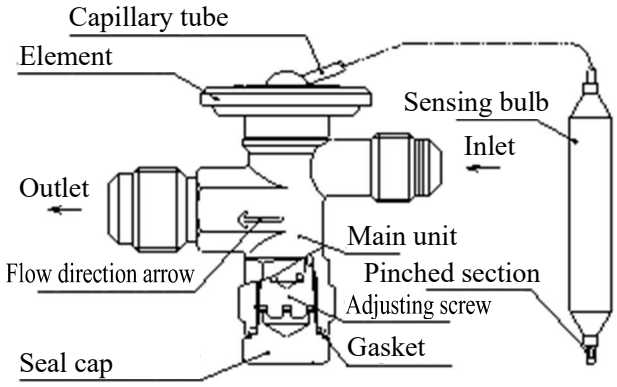
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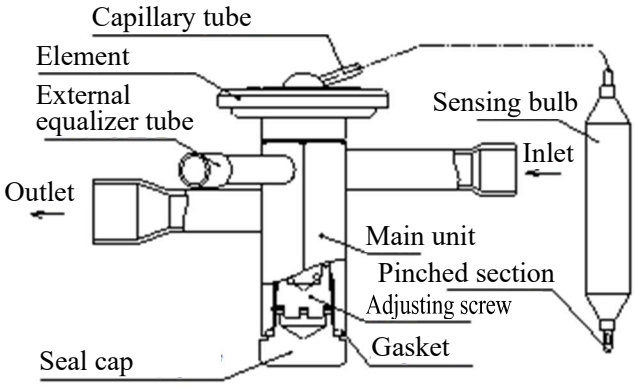
3. Product Overview

- A thermostatic expansion valve is a valve that causes the refrigerant on the high-pressure side of the refrigeration cycle to undergo adiabatic expansion into a low-temperature, low-pressure fluid that is partially vaporized. It also adjusts the refrigerant flow rate to an appropriate level by sensing changes in the superheat at the evaporator outlet. The superheat can be adjusted as desired by turning the adjusting screw.
- Suitable for refrigeration and air conditioning applications over a wide control temperature range (uni-directional).
- Flare joint models have a built-in strainer.
- Also suitable for systems with hot gas defrost.
- Compatible with low-GWP refrigerants (R1234yf).
- Applications
  - Display cases
  - Prefabricated freezers/refrigerators
  - Refrigerated vehicles
  - Air conditioning systems, greenhouse horticulture equipment, etc.
- Names and functions of parts

  - Part names



Type QCX - Flare type



Type RCX - brazed type

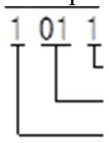
・ Catalog No. : The model name is printed on the element.

The catalog No. is structured as follows.
Before use, check the product label.
Example: QCX - 09 34 B V C
I II III IV V VI

I: Type	QCX	Internal equalizer type thermostatic expansion valve			
	RCX	Externally equalized thermostatic expansion valve			
II: Capacity	09	Nominal capacity (Example) 09: 0.9 USRT			
III: Joint size	34	Joint size 34: Inlet 3/8", Outlet 1/2"			
IV: Joint shape	B	Flare joint for copper tube			
	D	Brazed joint for copper tube			
V: Refrigerant		V	R410A		
		C1	R448A/R449A		
		C2	R407H		
		C3	R463A-J		
		C4	R513A		
		E1	R32		
		E2	R1234yf		
		E4	R454C		
		E5	R454B		
		E6	R454A		
VI: Charge type			SA	SA charge	
			C	C charge	
			SL	SL charge	

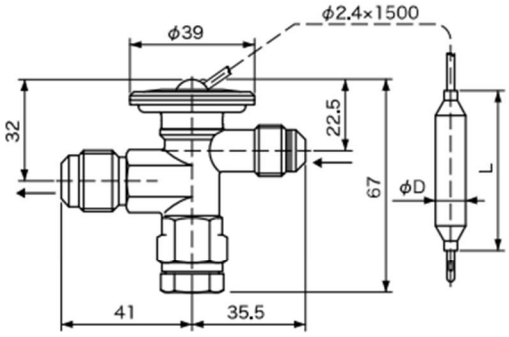
・ Serial No. : The serial number is printed on the element.

Example

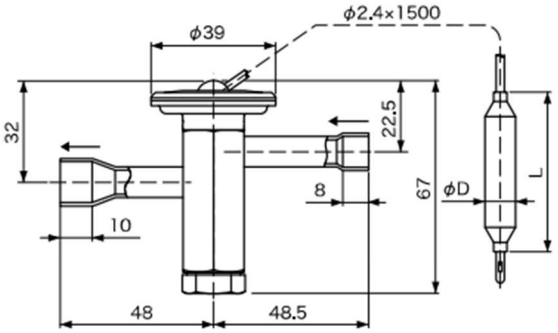


Last digit of the year
Day
Month
1 to 9…January to September
X…October
Y…November
Z…December

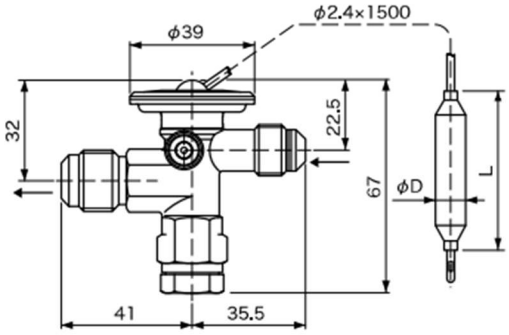
● External dimensions



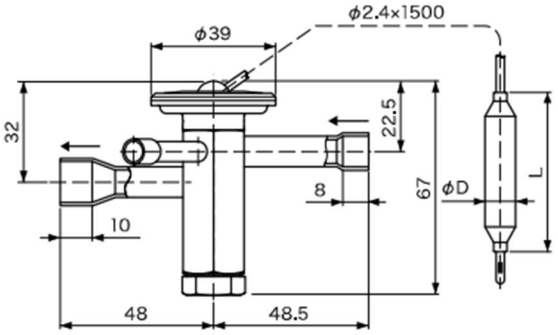
Type QCX - B



Type QCX - D



Type RCX - B



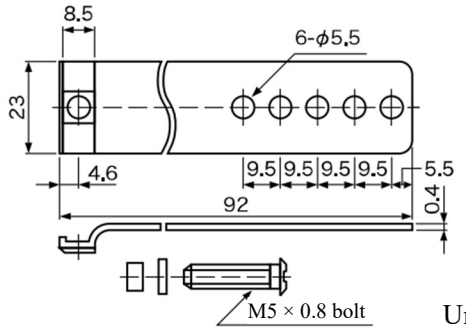
Type RCX - D

Unit: mm

Charge type	Unit: mm	
	D	L
SA	12.7	80
C	9.5	50
SL	12.7	80

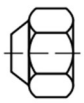
● Standard accessory

・ Mounting band for the sensing bulb



Unit: mm

・ Flare nut (flare style)



4. Specifications

Charge type			C	SA	SL
Controllable evaporating temperature	Refrigerant type: A1	R410A	-40 to -10°C	-45 to 10°C	-60 to -30°C
		R448A/R449A	-40 to 0°C	-40 to 10°C	-60 to -25°C
		R407H	-40 to 0°C	-40 to 10°C	-
		R463A-J	-40 to -10°C	-45 to 10°C	
		R513A	-30 to 10°C	-	
	Refrigerant type: A2L	R32	-40 to -10°C	-45 to 10°C	
		R1234yf	-30 to 10°C	-	
		R454C/R454A	-40 to 0°C	-40 to 10°C	
		R454B	-40 to -5°C	-30 to 10°C	
MOP			-	18°C	-20°C
Max. working pressure (MP)			3.0MPa		
Leak test pressure			3.3MPa		
Operating temperature conditions T_S: Element temperature T_B: Sensing bulb temperature			$T_S \geqq T_B$	$T_S \geqq T_B$	$T_S \geqq T_B$
Maximum temperature of the main unit and the sensing bulb			80°C		
Static superheat adjustment range			1 to 7°C (R448A,R449A, R513A,R1234yf) 1 to 5°C (R32,R454B*1,R454C*1,R410A,R407H,R463A-J) 1 to 4°C (R454C*2) 3 to 10°C (R454A) 3 to 6°C (R454B*2) *1 C charge *2 SA charge		
Heat pump system			Not applicable		
Hot gas defrost system			Applicable (Use at or below MP.)		
Factory setting			Static superheat: 5°C Static superheat: 4°C(R454C *SA charge)		

Notes:

* If a refrigerant other than an A1 refrigerant is used with this product, review the applicable laws and regulations at the design stage, carefully confirm suitability, and select an appropriate model.

5. Handling and Storage

WARNING	
	Do not use the product in corrosive environments. Doing so may cause external leakage or damage. If refrigerant leaks from the expansion valve, it may lead to serious accidents such as fire due to ignition or suffocation due to a decrease in oxygen concentration.
	When transporting the product, wear protective gear, such as safety shoes, to ensure safety. There is a risk of injury, such as a bone fracture, if the product falls or tips over.

CAUTION	
	When unpacking or installing the product, wear appropriate protective gear (work gloves, protective goggles, etc.) to ensure safety. There is a risk of injury from sharp edges on the packaging box, product, or tools.

- Do not use the product if it has been dropped.
- Do not dent, scratch, or deform the sensing bulb. When attaching it to the suction pipe of the refrigeration unit, incomplete contact may cause malfunction.
- Do not apply impact or load to the element. Doing so may cause malfunction or external leakage.
- Do not bend or strike the pinched section at the tip of the capillary tube. Doing so may cause the capillary tube to break.
- Do not bend, route, or carry the capillary tube in a way that applies load to the brazed section. Doing so may cause the capillary tube to break.
- Do not scratch or deform the flare surface or brazed joint. Doing so may cause external leakage.
- Do not strike the product or subject it to impact. Doing so may cause failure.
- Do not use the product in corrosive environments. Doing so may cause external leakage or damage.
- When removing the expansion valve from the packaging box or transporting it, hold the main unit of the expansion valve, not the capillary tube. Handling the product in a way that applies load to the brazed section of the capillary tube may cause damage.

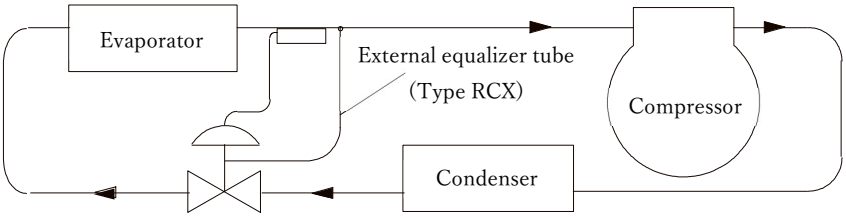
6. Assembly

WARNING	
	When transporting a heavy product, wear protective gear, such as safety shoes, to ensure safety. There is a risk of injury, such as a bone fracture, if the product falls or tips over.
	When performing brazing with nitrogen purging, wear appropriate protective gear (protective goggles, heat-resistant gloves, etc.), provide a pressure relief opening to prevent an unintended rise in internal pressure, and work safely. Failure to do so may cause blindness, injury, or burns due to splashing of high-temperature materials such as flux.
	When performing leak tests or charging refrigerant, do not apply pressure exceeding the limits specified in the instruction manual. Applying abnormal pressure beyond the product specifications may cause the equipment or piping to rupture, resulting in injury from scattered parts or suffocation due to leaked refrigerant. Before beginning work, be sure to check the specifications and pressure range of the equipment to be used, take all necessary safety precautions, and wear appropriate protective gear.
	When assembling the product, do not allow liquid to become trapped inside the product. If the temperature changes while liquid is trapped inside, the pressure may rise rapidly, causing damage to the product or refrigerant leakage and leading to serious accidents such as fire or suffocation. Before beginning work, always check the condition inside the piping and ensure a safe inspection environment.
	When performing brazing, always ensure that there are no flammable materials in the vicinity and take all necessary safety precautions. Failure to do so may result in unexpected fire spread or burns.
	When installing the product, wear appropriate protective gear (work gloves, protective goggles, etc.) to ensure safety. There is a risk of injury from sharp edges on the product or tools, flying debris, or the product falling or striking against something. Also, if debris or similar matter enters the eyes, it may cause blindness.
	When performing brazing, wear appropriate protective gear (safety goggles, heat-resistant gloves, etc.). Working without protective gear may result in blindness or severe burns.
	Do not under any circumstances apply abnormal external force, such as using the products or pipe joints as scaffolding to climb. If the product or joints are damaged by such actions, refrigerant leakage may result, leading to frostbite, suffocation, or fire.
	When using a flame that emits intense light during brazing, wear appropriate protective gear such as safety goggles. Looking directly at the intense light without protective gear may cause impaired vision or blindness.
	When performing work, work in a well-ventilated location or use an exhaust system with adequate ventilation. Also, wear appropriate protective gear, such as a dust mask. Failure to do so may cause inhalation of hazardous substances, such as fumes, resulting in respiratory disorders.

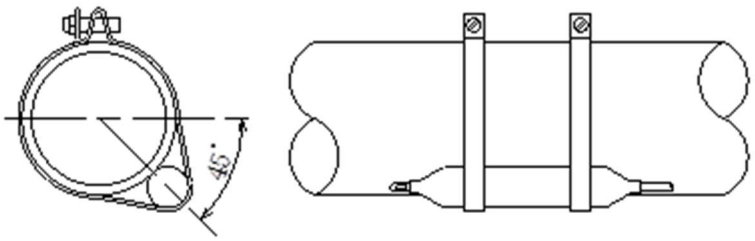
CAUTION

When transporting a heavy product, take all necessary safety precautions, use appropriate lifting aids, and ensure sufficient working space. Transporting the product in an awkward posture may place excessive strain on the body and harm your health.

- Before unpacking, ensure that the packaging box is not deformed or damaged.
- During unpacking, ensure that the product is not deformed or damaged.
- After unpacking, ensure that the product meets your requested specifications.
- Do not subject the product to impact during unpacking. Doing so may cause failure or malfunction.
- When removing the expansion valve from the packaging box or transporting it, hold the main unit of the expansion valve, not the capillary tube. Handling the product in a way that applies load to the brazed section of the capillary tube may cause damage.
- Install the expansion valve in the position shown below, with the element facing upward. If the element cannot be positioned upward, install Type QCX with the outlet side facing downward and Type RCX with the external equalizer tube side facing downward.



- Check the direction of refrigerant flow before connecting.
- Connect the external equalizer tube of Type RCX using tubing with an inner diameter of φ2 or more.
- Foreign matter entering the piping may cause clogging, valve leakage, or increased leakage from the external equalizer tube. For brazed copper tube models, install a strainer on the inlet joint side before use (Recommended: 100 mesh or finer).
- Attach the sensing bulb in parallel and in close contact with the suction pipe at the evaporator outlet using a copper band or copper wire, and fit a protection cover to shield it from outside air.
  If the suction pipe is 7/8" or larger, install it at the 4 o'clock or 8 o'clock position. If the suction pipe is smaller than 7/8", it may be installed up to the top position.



When installing to a 7/8" suction pipe

- Secure the capillary tube to prevent resonance. Resonance may cause cracking or breakage.
- When brazing the expansion valve to the piping, wrap a cloth thoroughly moistened with water around the main unit and the element to keep their temperatures below 120°C. Also, do not direct the burner flame toward the main unit or the element.
- When brazing the expansion valve to the piping, fill the interior with an inert gas such as nitrogen to prevent the formation of oxide scale. If foreign matter such as oxide scale enters the valve, it may cause valve leakage, increased leakage from the external equalizer tube, or malfunction. Also, after purging with an inert gas such as nitrogen, do not allow the inert gas to flow during heating. The heated gas may melt the internal resin parts.
- When tightening the flare nut or performing similar work, ensure that tools do not hit the element. Excessive force applied to the element may cause damage or external leakage.

● After piping work, perform a leak test and confirm that sufficient sealing integrity has been achieved.
● Note that the following issues are not covered by the warranty.
(1) Corrosion caused by hydrolysis of the refrigeration oil
(2) Flow path clogging due to foreign matter or moisture in the system, increased leakage from the external equalizer tube, malfunction, and erosion

7. Adjustment

WARNING	
	When performing adjustments, wear appropriate protective gear (work gloves, etc.) to ensure safety. There is a risk of injury from sharp edges on the packaging box, product, or tools.
	When opening the seal cap, do so slowly while checking that there is no refrigerant leakage. If the cap is removed forcefully and refrigerant has leaked inside, the cap may be blown off by pressure, causing injury if it strikes the body or blindness if it strikes the eyes.
	When performing adjustments, be sure to wear appropriate protective gear (safety goggles, etc.). Turning the adjusting screw may cause internal refrigerant, refrigeration oil, or metal particles to scatter outward. If these enter the eyes, they may cause impaired vision, blindness, or bodily injury.
	When performing work, work in a well-ventilated location or use an exhaust system with adequate ventilation. Also, be sure to wear appropriate protective gear, such as a mask. Failure to do so may result in respiratory disorders due to accumulated gas or suffocation due to leaked gas or similar substances.
	Do not tighten screws related to sealing integrity in gasket seal sections without proper torque control. Always tighten them to the appropriate torque specified in the instruction manual and properly control the tightening force. Failure to do so may result in refrigerant leakage, leading to fire or suffocation.

- Adjust the static superheat by turning the adjusting screw. Remove the seal cap and turn the adjusting screw using a flathead screwdriver or similar tool.
  To increase the static superheat: Turn clockwise.
  To decrease the static superheat: Turn counterclockwise.
  The change in the static superheat setpoint per revolution of the adjusting screw is approximately 0.045 MPa.
- Before turning the adjusting screw, mark the main unit and the adjusting screw in advance so that the factory setting can be identified.
- Even if the superheat is changed by turning the adjusting screw, the change does not appear immediately. Allow some time and adjust while checking the operating condition.
- Do not use excessive force when turning the adjusting screw. Doing so may cause damage.
- A small amount of refrigerant may leak out when the adjusting screw is turned.
- After adjustment, be sure to tighten the seal cap to prevent external leakage. Make sure that the gasket is in place on the main unit side, and tighten the cap to a torque of approximately 7 N·m. If leakage occurs, retighten the cap. (Do not exceed 12 N·m.) We shall not be liable for any damage resulting from leakage from the fastening area.
  If the gasket has deteriorated, replace it.

8. Operation

WARNING	
	When using the product, do not apply pressure exceeding the limits specified in the instruction manual. Applying abnormal pressure beyond the product specifications may cause the equipment or piping to rupture, resulting in injury from scattered parts or suffocation due to leaked refrigerant. Before beginning work, be sure to check the specifications and pressure range of the equipment to be used, take all necessary safety precautions, and wear appropriate protective gear.
	When performing work, work in a well-ventilated location or use an exhaust system with adequate ventilation. Also, be sure to wear appropriate protective gear, such as a mask. Failure to do so may result in respiratory disorders due to accumulated gas or suffocation due to leaked gas or similar substances.
	Use the product only under the conditions described in the instruction manual. Perform periodic maintenance. Exposure to harsh conditions beyond the specified operating conditions or prolonged use may degrade the sealing integrity of the product. In addition, leaked refrigerant may cause fire or suffocation.
	Do not use the product in corrosive environments. Doing so may cause external leakage or damage. If refrigerant leaks from the expansion valve, it may lead to serious accidents such as fire due to ignition or suffocation due to a decrease in oxygen concentration.

- After installing the product correctly, be sure to perform a trial operation, check and adjust the operation, and confirm that the entire system functions properly before use.
- Do not use the product in corrosive environments. Doing so may cause external leakage or damage.

9. Maintenance and Inspection

WARNING	
	Before maintenance, inspection, or replacement, be sure to recover the refrigerant from the refrigeration system and perform the work only after confirming that no refrigerant remains inside the product. Failure to do so may cause fire or suffocation due to refrigerant leakage. In addition, escaping refrigerant or flying debris may cause eye or bodily injury, or even blindness.
	Use the product only under the conditions described in the instruction manual. Perform periodic maintenance. Exposure to harsh conditions beyond the specified operating conditions or prolonged use may degrade the sealing integrity of the product. In addition, leaked refrigerant may cause fire or suffocation.
	Perform blazing in a well-ventilated location or use an exhaust system with adequate ventilation. Also, wear appropriate protective gear, such as a mask. Failure to do so may cause inhalation of hazardous substances, such as fumes, resulting in respiratory disorders, or suffocation from leaked gas.
	When using the product, do not apply pressure exceeding the limits specified in the instruction manual. Applying abnormal pressure beyond the product specifications may cause the equipment or piping to rupture, resulting in injury from scattered parts or suffocation due to leaked refrigerant. Before beginning work, be sure to check the specifications and pressure range of the equipment to be used, take all necessary safety precautions, and wear appropriate protective gear.
	Maintenance and inspection work must be performed by personnel with the appropriate skills. Do not apply abnormal external force, such as using the products or pipe joints as scaffolding to climb. Excessive loads may damage the product, resulting in refrigerant leakage and leading to serious accidents such as fire or suffocation due to a decrease in oxygen concentration. Always check the product for abnormalities before and after work, and ensure safety before proceeding.
	When replacing the product, recover the refrigerant from the refrigeration system and perform the work only after confirming that no refrigerant remains inside the product. If refrigerant recovery is incomplete, refrigerant may leak, causing fire due to ignition or suffocation due to a decrease in oxygen concentration. In addition, always follow the correct refrigerant recovery procedure, and thoroughly check the connections and control the recovered amount.
	Never use the product without installing the sealing parts. Before use, always ensure that the sealing parts are properly assembled. Using the product without these parts installed may cause refrigerant leakage, which may lead to suffocation or serious accidents.

● Periodic operational checks are recommended.

10. Disposal

When you no longer need the product, dispose of it properly in accordance with the laws, regulations, and ordinances of your local government.
Also, do not reuse any part of the product.

CONSENT RELATED TO DISCLAIMERS

We, SAGINOMIYA SEISAKUSHO, INC., (hereinafter referred to as "Saginomiya"), truly appreciate your choosing Saginomiya's product.
When using Saginomiya's own products and other products supplied by Saginomiya (hereinafter referred to as the "Product"), this document as provided below shall be applicable except to the extent that there is anything to the contrary in any applicable estimate, agreement, catalogue, specification, etc.

• CONFIRMATION OF OPERATION

All customers using the Product (hereinafter referred to as "Customers") are requested to, after properly installing the Product, test the operation of the Product to confirm that all the systems in connection with the Product fully function.
In order to prevent the occurrence of bodily injury, fire accidents, serious damage, etc., in connection with the Customers' machinery or equipment due to improper installation of the Product, Saginomiya kindly requests the Customers to take the necessary safety measures by preparing safe designs such as a fail-safe design (*1) and a fire spread prevention design, as well as to make the proper adjustments for product reliability necessary for fault-tolerance (*2).

(*1) Fail-safe design: Design to ensure safety in the event of any mechanical failure
(*2) Fault-tolerance: Utilization of redundancy technology

Periodic Inspection of the Product
Be sure to confirm the proper operation of the Product and keep records of such operation at least once a year.

Saginomiya shall be held harmless and be indemnified by the Customers from any damages incurred due to the Customers failing to conduct the above operational procedures, provided, however, that, this shall not apply if the damages which the Customers incurred due to the defect of the Product caused by Saginomiya.

• RESTRICTIONS OF USE

The Product is designed and manufactured for the purpose of using them for cooling and heating and refrigerating appliances and air conditioning equipment or various industrial equipment, but is not designed and manufactured for the purpose of using the Product for any instrument or system related to human life or health purposes.
Therefore, the use of the Product in fields related to items (1) through (3) below is not intended whatsoever.
Saginomiya shall be held harmless and be indemnified from any and all damages incurred by use of the Product under item (3).

(1) In any field related to nuclear power and radiation;
(2) In any field related to space or seafloor equipment;
(3) In any equipment or device requiring a high degree of reliance on such equipment or device with respect to which it is reasonably foreseeable that failure or malfunction of the equipment or device would either directly or indirectly cause serious damage to human life, health or property;

Also, when using the Product under the fields related to items (1) through (10), (except for item (3), in relation to which the Product must never be used), please be sure to notify Saginomiya's contact desk in charge of sales and obtain Saginomiya's prior written approval for such use.

Saginomiya shall be held harmless and be indemnified from any and all damages incurred by use of the Product in relation to these fields if the Customers do not notify Saginomiya's contact desk and obtain Saginomiya's prior written approval.

(4) Heating, cooling, and refrigeration/air conditioning equipment using flammable and/or toxic refrigerants, excluding A2L refrigerants as defined in ISO 817, or various industrial equipment using flammable and/or toxic fluids, excluding A2L refrigerants as defined in ISO 817;
(5) Transportation device (railroad, aviation, ship or vessel, vehicle equipment, etc.);
(6) Disaster-prevention or crime-prevention device;
(7) Facility or application directly related to medical equipment, burning appliances, electro thermal equipment, amusement rides and devices, facilities/applications associated directly with billing;
(8) Equipment requiring high reliance on supply systems such as electricity, gas, water, etc., in large-scale communication system, or in transportation or air traffic control system;
(9) Facilities that are to comply with regulations of governmental / public agencies or specific industries or
(10) Other machineries or equipment equivalent to those set forth in the above items (4) to (9) which require for high reliability and safety.
(11) Machinery and equipment that are intended or expected to be used under conditions other than those specified in the catalogues and instruction manuals;

It is recommended to replace the Product within 5 to 10 years of delivery if no other duration of use is provided in the applicable specifications or instruction manual because the conditions and environment of use also have an impact on the Product.

• SCOPE OF WARRANTY

SAGINOMIYA WILL PROVIDE THE CUSTOMERS WITH REPLACEMENT OR REPAIRED THE PRODUCT DELIVERED, FREE OF COST, ONLY WITHIN ONE YEAR (NOTE 1) OF DELIVERY TO THE CUSTOMER, IF FAILURE OCCURS IN THE CUSTOMERS' EQUIPMENT USING THE PRODUCT DUE TO A DEFECT OF THE PRODUCT; PROVIDED, HOWEVER, THAT IN ANY EVENT THE AMOUNT THAT SAGINOMIYA BEARS FOR THE DAMAGES INCURRED BY THE FAILURE OF THE PRODUCT OR CUSTOMERS' EQUIPMENT SHALL NOT EXCEED THE PRICE OF THE PRODUCT WE DELIVERED. IN ADDITION, SAGINOMIYA SHALL BE HELD HARMLESS AND BE INDEMNIFIED FROM ANY AND ALL DAMAGES INCURRED WHEN THE FAILURE OF THE CUSTOMERS' EQUIPMENT OCCURRED DUE TO ANY CAUSE SET FORTH BELOW.

(1) WHEN CAUSED BY INAPPROPRIATE HANDLING OR USE OF THE PRODUCT BY THE CUSTOMERS (SUCH AS NOT COMPLYING WITH THE CONDITIONS, ENVIRONMENTAL SPECIFICATIONS OR CAUTIONS INDICATED IN ANY APPLICABLE CATALOGUE, SPECIFICATIONS, INSTRUCTION MANUAL, ETC.);
(2) WHEN FAILURE OCCURRED DUE TO ANY REASON OTHER THAN THE PRODUCT;
(3) WHEN CAUSED BY MODIFICATION OR REPAIR OF THE PRODUCT MADE BY ANYONE OTHER THAN SAGINOMIYA OR DESIGNEE OF SAGINOMIYA;
(4) WHEN CAUSED BY THE USE OF THE PRODUCT IN VIOLATION OF THE ABOVE "RESTRICTIONS OF USE" OR "CONFIRMATION OF OPERATION";
(5) WHEN SUCH FAILURE WAS NOT REASONABLY FORESEEABLE AT THE TIME OF SAGINOMIYA'S SHIPMENT; OR
(6) BY ANY OTHER CAUSE NOT ATTRIBUTABLE TO SAGINOMIYA, SUCH AS AN ACT OF GOD, DISASTER, OR ACT OF ANY THIRD PARTY.

PLEASE NOTE THAT THE CUSTOMERS WILL NOT BE ENTITLED TO ANY OF THE ABOVE WARRANTY IF THE CUSTOMERS PURCHASED THE PRODUCT FROM INTERNET AUCTION, ETC.
(NOTE 1): IN THE CASE OF DANFOSS PRODUCTS, WITHIN EIGHTEEN (18) MONTHS FROM THE DATE OF MANUFACTURE.

SAGINOMIYA
SEISAKUSHO,INC.

This document shall apply to any catalogue and instruction manual issued by Saginomiya on or after December 2025.
STF04001 Annex1a 2025.12

The information in this instruction manual is current as of the date of publication and is subject to change without prior notice due to specification changes or improvements to the product.

We have made every effort to ensure its accuracy, but we shall not be responsible for any damages, direct or indirect, arising from errors, omissions, or use of the information.

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